

REMARKS**Summary of the Final Office Action**

Claims 1 and 5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,208,084 to Urakabe et al. (hereinafter "Urakabe").

Claims 4 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Urakabe in view of U.S. Patent No. 4,612,611 to Matthes et al. (hereinafter "Matthes").

Summary of the Response to the Final Office Action

Applicants have added text to the specification, at page 21, to reflect the subject matter of independent claims 1 and 5 in the manner as agreed upon with Supervisory Patent Examiner Amare Mengistu in a telephone interview with Applicants' undersigned representative on November 1, 2007, as will be discussed in more detail in the following discussion. Claims 1 and 4-6 remain currently pending and are currently under consideration.

Rejections under 35 U.S.C. § 103(a) and Statement of Summary of Examiner Interview

Claims 1 and 5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Urakabe. Claims 4 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Urakabe in view of Matthes. These rejections are respectfully traversed for at least the following reasons.

Supervisory Patent Examiner Amare Mengistu is thanked for the courtesies extended to Applicants' undersigned representative in a telephone interview on November 1, 2007. Applicants note that the Interview Summary form (PTOL-413) that was mailed to Applicants on November 6, 2007 by the USPTO appears to include a typographical error as it indicates the

“Date of Interview” as “01 October 2007” when the actual interview date was November 1, 2007.

Background Comments Regarding Telephone Interview

Applicants’ undersigned representative had initially contacted USPTO Examiner Emmanuel Hailemariam on October 19, 2007 by telephone and requested that a telephone interview be conducted to discuss the merits of this application. Examiner Hailemariam noted that the merits of this case could only be conducted if Applicants’ undersigned representative first sent a “Proposed Agenda” explaining the technical points that Applicants’ undersigned representative intended to discuss. Accordingly, Applicants’ undersigned representative forwarded the “Proposed Agenda” to Examiner Hailemariam by facsimile on October 19, 2007. The contents of this “Proposed Agenda” will be discussed in the following summary of the Examiner interview held on November 1, 2007. After receiving the “Proposed Agenda,” Examiner Hailemariam indicated to Applicants undersigned representative that his supervisor Amare Mengistu, who is a Supervisory Patent Examiner (“SPE”) would need to be involved in the interview. Accordingly, Examiner Mengistu placed a call to Applicants undersigned representative on October 23, 2007 and a telephone interview was scheduled for the following week.

Summary of the Substance of Telephone Interview and Associated “Detailed Agenda” Facsimile

Accordingly, the telephone interview was conducted on November 1, 2007 between Examiner Mengistu and Applicants’ undersigned representative. During this interview, a

discussion of the technical points presented in the above-discussed "Proposed Agenda" was undertaken.

The contents of the "Proposed Agenda" as sent by facsimile to the USPTO on October 19, 2007 is as follows:

Independent claims 1 and 5 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Urakabe et al. (U.S. Patent No. 6,208,084) (hereinafter "Urakabe"). This reference has been reapplied in the Final Office Action dated July 25, 2007 even after extensive amendments were made to independent claim 1 and a new independent claim 5 including a similar scope of features as amended independent claim 1 was added to this application in the Amendment filed on May 25, 2007.

As a result, the Applicants have closely studied the applied Urakabe reference and have found some significant differences between the independent claims 1 and 5 of this application and the disclosure of Urakabe. As a result, Applicants' representative contacted Examiner Hailemariam by telephone and requested the opportunity to discuss these differences in order to give Applicants a better idea of how they should next proceed. Examiner Hailemariam requested that the following agenda be provided to him before the substance of these differences could be discussed.

The disclosed invention of this application relates to a novel driving method used in a display panel arrangement as illustrated in Fig. 3 of this application. Applicants will now discuss the main features of the disclosed invention, with an emphasis on the following features (1) – (4) that are placed in bold in the following discussion.

Fig. 3 of the instant application shows a driving panel arrangement in which: (1) first and second row electrodes X and Y are provided in pairs. Also, column electrodes Z

are provided that extend in the direction intersecting the first and second row electrodes.

Applicants note that such an arrangement is known in this art as a “three-electrode surface discharge type ac PDP.”

The arrangement shown in Fig. 3 includes row electrode drive circuit 41 for driving row electrodes X, row electrode drive circuit 31 for driving row electrodes Y and column electrode drive circuit 21 for driving the column electrodes Z. Fig. 6 of this application shows these three drive circuits with additional detail.

Prior art display panels having this type of arrangement have significant problems of high power consumption due to, for example, a clamping of a high voltage at the output of the column electrode drive circuit. The specification of this application, for example, at pages 19-21 and 27 describes how there is a desire to reduce power consumption in the sustain period in such a three-electrode surface discharge type ac PDP display panel arrangement.

As a result, the inventors have discovered a novel approach of (2) applying bipolar (+ and – polarity) pulse signals that are 180° out of phase (half cycle out of phase) with each other to the first and second row electrodes X and Y, respectively, in the sustain period. Such a novel driving scheme is illustrated, for example, in Figs. 7A and 7B of this application. For example, Fig. 7B shows the Y sustain signal is displaced by a half cycle from the phase of the X sustain signal, as described at page 20, lines 17-18 of the specification.

The specification of this application, for example, at pages 19-21 and 27 describes how this driving scheme results in the output terminal to the column electrode being maintained in a high impedance state so that **(3) the column electrodes are placed in a high impedance state during the sustain period** and the **(4) parasitic diode at the output of the column electrode driving circuit (for example, 21 in Fig. 6 of this application)** is prevented from clamping

resulting in a reduction in the load capacitance being achieved during the sustain resonance period. As a result, a significant reduction in the power consumption in the sustain period (display period) is obtained.

Disclosure of Urakabe

Applicants have closely studied the applied Urakabe reference and have found significant differences between it's disclosure and the claims of the instant application, both with regard to the structure of the subject display panels and the claimed driving methods of claims 1 and 5 of this application.

Figs. 1-3 of Urakabe show a structure of a display panel having a rear substrate 100 and a front substrate 101. The front substrate is formed of a glass substrate on which a common electrode 110, transparent electrode pairs 108 and individual electrodes 109 are provided. One of the transparent electrode pairs 108 is connected to the common electrode 110 and the other of the transparent electrode pairs 108 is connected to the individual electrode 109. All of the electrodes 110, 108 and 109 are arranged on the same substrate, namely the glass substrate 102b of the front substrate 101. The rear substrate 100 is formed of a glass substrate 102a having recesses coated with blue, green and red phosphors 105, 106 and 107.

Differences between Urakabe and the Instant Invention

As a result, Applicants respectfully submit that Urakabe discloses a two-electrode type surface discharge type ac PDP. See col. 10, lines 11-12 of Urakabe. Applicants note that this arrangement, and the associated disclosure of Urakabe, differs significantly from the instant application's invention which is based on the above-discussed three-electrode PDP arrangement, at least in that the above-discussed features (1)-(4) are not shown nor suggested by the disclosure of Urakabe. For example, the arrangement discussed in Urakabe does not include (1) first and

second row electrodes provided in pairs or column electrodes that extend in the direction intersecting the first and second row electrodes. Also, Urakabe does not teach or suggest (2) providing bipolar (+ and -) pulse signals that are 180° out of phase with each other to first and second row electrodes, respectively. Also, the above-discussed (3) high-impedance state and (4) parasitic diode features discussed above are not shown by Urakabe.

As alluded to with regard to feature (2) above, the driving schemes disclosed in Urakabe are quite different from those of the instant application. For example, in Urakabe, in the display period (sustain period), 0v or V_a is applied to each of the individual electrodes 109. Also, in Urakabe, in the display period (sustain period), a positive and negative polarity pulse signal whose level varies between $-V_s$, 0v and V_s is applied to the common electrode 110. Thus, Applicants respectfully submit that Urakabe merely discloses that a bipolar pulse signal is only applied to the common electrode 110 which is connected to one of the pair of transparent electrodes 108. Applicants note that the arrangement disclosed in Urakabe does not include column electrodes and the above discussed features (1)-(4) are not disclosed in Urakabe.

Conclusions of "Proposed Agenda"

Applicants closed the proposed agenda by emphasizing how the advantageous driving scheme of the instant application results in a significant power consumption reduction. For example, an average $(X+Y)/2$ of the voltages X, Y applied to the first and second row electrodes is applied to the column electrode when it is placed in the state of high impedance. This would normally result in a reduction of driving capacity. However, the above-discussed feature (2) of providing bipolar (+ and -) pulse signals that are 180° out of phase with each other to the first and second row electrodes, respectively, results in the potential at the column electrode being

lowered to almost $\frac{1}{4}$ of V_s . As a result, the clamping of the driving voltage due to the parasitic diode (feature (4) discussed previously) will be avoided. Accordingly, the high-impedance state of the column electrode is maintained and a sufficient reduction in power consumption can be achieved. Urakabe is directed to a different type of display panel than the instant application. It does not even include column electrodes. Applicants thus note that the disclosure of Urakabe inherently does not contemplate or encounter the problems which have been solved by the above-described features of the instant application. There is thus no need to provide the above-discussed features (1)-(4) to the display arrangement of Urakabe.

Examiner Mengistu's Agreement with Technical Arguments of "Proposed Agenda"

Applicants' undersigned representative reached agreement with Examiner Mengistu in the November 1, 2007 telephone interview that the previously applied U.S. Patent No. 6,208,084 reference to Urakabe et al. (hereinafter "Urakabe") does not teach the features currently claimed in independent claims 1 and 5 of this application for the technical reasons explained in detail on the October 19, 2007 Proposed Agenda, as set forth in detail in the foregoing remarks.

However, Examiner Mengistu noted his concern that the specification of the instant application does not particularly include a description of the particular wording of independent claim 1, as amended on May 25, 2007. Examiner Mengistu agreed that such features were clearly illustrated, however, in Figs. 7A and 7B of the instant application, for example.

Accordingly, Applicants' undersigned representative reached agreement with Examiner Mengistu that this issue could be resolved by adding paragraphs to the specification that include the text of the current independent claims, as amended on May 25, 2007. Examiner Mengistu agreed that this would also be an appropriate option to resolve his concerns. The Examiner also

confirmed that such an approach would not result in any “new matter” issues because these claimed features are clearly shown at least in Figs. 7A and 7B of the originally-filed disclosure of this application. Accordingly, Applicants have decided to proceed with this option as discussed and approved by Examiner Mengistu in the telephone interview conducted on November 1, 2007, by adding paragraphs to page 20 of the instant application’s specification to describe the language of independent claims 1 and 5. As noted above, and as agreed to by Examiner Mengistu, this addition of new text to the specification does not raise “new issues” because these features were already disclosed in connection with Figs. 7A and 7B, for example, in connection with the associated descriptive text in the originally-filed specification.

All Pending Claims are now in Condition for Allowance

Applicants respectfully submit that the features of independent claims 1 and 5 of the instant application are neither shown nor suggested in the applied art of record. As noted above, Examiner Mengistu agreed during the November 1, 2007 interview that Urakabe does not disclose the features of independent claims 1 and 5 of the instant application for the technical reasons set forth previously. Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a) should be withdrawn because Urakabe does not teach or suggest each feature of independent claims 1 or 5. Furthermore, Applicants respectfully assert that dependent claims 4 and 5 are also allowable at least because of their dependence from independent claim 1 or 5, and the reasons set forth above. Also, the additionally applied reference to Matthes, with regard to dependent claims 4 and 6, fails to cure the deficiencies of Urakabe as discussed previously.

CONCLUSION

In view of the foregoing discussion, Applicants respectfully request the entry of the amendments to place the application in clear condition for allowance or, in the alternative, in better form for appeal. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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